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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/840,230	05/07/2004	Jang-keun Oh	116511-00131	9692

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WASHINGTON, DC 20037

EXAMINER

HOPKINS, ROBERT A

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/840,230

Applicant(s)

OH ET AL.

Examiner

Robert A. Hopkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 9 is/are rejected.
- 7) ☒ Claim(s) 5-8 and 10-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4,9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Conrad et al(6334234).

Conrad et al teaches a cyclone separating apparatus for use in a vacuum cleaner comprising a first cyclone(28) for separating dust from dust-laden air, a plurality of second cyclones(62) for separating minute particles of dust from dust –laden air by a second separation of dust from dust-laden air with a centrifugal force; and an inlet-outlet cover(see figure 3) disposed on an upper part of the first cyclone and the second cyclones, for a fluid communication between the first cyclone and the second cyclones, the inlet-outlet cover through which purified air cleaned by the second cyclone, is discharged, wherein the inlet-outlet cover comprises an air channel(66) connected such that the whole of air discharged from the first cyclone flows into at least one of the plurality of second cyclones. Conrad et al further teaches a plurality of outlet channels(70) penetrating into the inlet-outlet cover so air can be discharged from at least one of the plurality of second cyclones. Conrad et al further teaches wherein the first cyclone includes at least a first outlet, at least one of the plurality of second cyclones includes at least a second outlet, and at least a portion of the plurality of outlet

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channels is inserted into the second outlet so that cleaned air is discharged through the plurality of outlet channels. Conrad et al further teaches wherein one end of the outlet channel is connected to the second outlet formed on one side of the at least one second cyclone, and the other end is open in an upward direction of the inlet-outlet cover.

Conrad et al further teaches wherein the cyclone separating apparatus further comprises a cyclone cover installed on an upper part of the inlet-outlet cover.

### ***Allowable Subject Matter***

Claims 5-8,10,11,12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 5 recites "wherein the other end of the outlet channel is cut into a slope inclining toward a central direction of the inlet-outlet cover". Conrad et al teaches an other end of an outlet channel which is parallel with the inlet outlet cover. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide wherein the other end of the outlet channel is cut into a slope inclining toward a central direction of the inlet-outlet cover because Conrad et al does not suggest such a modification. Claims 6-8 depend on claim 5 and hence would also be allowable upon incorporation of claims 5,4,3, and 2 into claim 1.

Claim 10 recites "wherein the cyclone cover is substantially in a conical shape with open upper and lower spaces". Conrad et al teaches a cylindrical cover with no upper open space. It would not have been obvious to someone of ordinary skill in the

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art at the time of the invention to provide a cyclone cover which is substantially in a conical shape with open upper and lower spaces because Conrad et al does not suggest such a modification.

Claim 11 recites "wherein the second cyclones are installed on an outer periphery of the first cyclone to enclose the first cyclone, and , the first cyclone and second cyclones are integrally formed". Conrad et al teaches second cyclones installed above the first cyclone. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide wherein the second cyclones are installed on an outer periphery of the first cyclone to enclose the first cyclone, and , the first cyclone and second cyclones are integrally formed because Conrad et al does not suggest such a modification. Claim 12 depends on claim 11 and hence would also be allowable upon incorporation of claims 11,4,3, and 2 into claim 1.

Claims 13 and 14 are allowed.

Claim 13 recites "a vacuum cleaner main body for generating a suction force to draw-in dust-ladened air; ... ; and a cyclone separating apparatus installed in the vacuum cleaner main body, a first cyclone for separating dust from dust-ladened air, a plurality of second cyclones for separating fine dust particles by a second separation of air which was previously separated at the first cyclone using centrifugal force; and an inlet-outlet cover installed on an upper part of the first cyclone and the plurality of second cyclones, for a fluid-communication between the first cyclone and the plurality of second cyclones through which dust-removed air from the plurality of second cyclones is discharged". Conrad et al teaches a cyclone separating apparatus a first cyclone for

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separating dust from dust-laden air, a plurality of second cyclones for separating fine dust particles by a second separation of air which was previously separated at the first cyclone using centrifugal force; and an inlet-outlet cover installed on an upper part of the first cyclone and the plurality of second cyclones, for a fluid-communication between the first cyclone and the plurality of second cyclones through which dust-removed air from the plurality of second cyclones is discharged, however Conrad et al fails to teach the cyclone separating apparatus installed in a vacuum cleaner main body. The motor of Conrad et al is installed above and in line with the cyclone separating apparatus, and the cyclone separating apparatus is not a single unit which is able to be installed in vacuum cleaner main body. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a vacuum cleaner main body for generating a suction force to draw-in dust-laden air; ... ; and a cyclone separating apparatus installed in the vacuum cleaner main body, a first cyclone for separating dust from dust-laden air, a plurality of second cyclones for separating fine dust particles by a second separation of air which was previously separated at the first cyclone using centrifugal force; and an inlet-outlet cover installed on an upper part of the first cyclone and the plurality of second cyclones, for a fluid-communication between the first cyclone and the plurality of second cyclones through which dust-removed air from the plurality of second cyclones is discharged because Conrad et al does not suggest such a modification. Claim 14 depends on claim 13 and hence is also allowed.

***Response to Arguments***

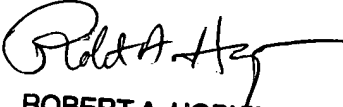
Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Friday, 7am-4pm, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rah  
February 16, 2006

  
ROBERT A. HOPKINS  
PRIMARY EXAMINER  
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